

## CLAIMS

1. An ACS circuit, which receives differential branch metrics (hereinafter referred to as "DBMs"), each of which is a difference between any two branches related to Viterbi decoding, performs additions of the received DBMs to differential path metrics 5 (hereinafter referred to as "DPMs"), each of which is a difference between any two states, and compares resultant DPMs obtained after the additions to select the most likely paths,

wherein of the DPMs, basic DPMs, each of which is a DPM between a path metric for a reference state and a path metric for another state, are retained and the most likely paths are selected according to the basic DPMs.

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2. The ACS circuit of Claim 1, comprising:

a basic DPM retaining section for retaining the basic DPMs;

a basic DPM calculating section for calculating the basic DPMs;

a reference DPM calculating section for calculating reference DPMs, which are

15 DPMs other than the basic DPMs and necessary for the basic DPM calculation by the basic DPM calculating section;

a basic DBM calculating section for calculating basic DBMs of the DBMs, the basic DBMs being necessary for the basic DPM calculation by the basic DPM calculating section; and

20 a path selecting section for selecting the most likely paths for the Viterbi decoding in accordance with the basic DPMs retained by the basic DPM retaining section, the reference DPMs calculated by the reference DPM calculating section, and the basic DBMs calculated by the basic DBM calculating section,

25 wherein the basic DPM calculating section calculates new basic DPMs in accordance with the basic DPMs retained by the basic DPM retaining section, the reference DPMs calculated by the reference DPM calculating section, the basic DBMs calculated by the basic DBM calculating section, and results of the most likely path selection by the path

selecting section.

3. The ACS circuit of Claim 2, wherein the basic DBM calculation by the basic DBM calculating section and the reference DPM calculation by the reference DPM calculating section are performed by parallel processing.

4. The ACS circuit of Claim 2, wherein the reference DPM calculating section calculates each of the reference DPMs by subtracting one of the basic DPMs retained by the basic DPM retaining section from another.

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5. The ACS circuit of Claim 2, wherein the basic DPM calculating section selects basic DPMs and basic DBMs, from which the new basic DPMs are calculated, from the basic DPMs retained by the basic DPM retaining section, the reference DPMs calculated by the reference DPM calculating section, and the basic DBMs calculated by the basic DBM calculating section, in accordance with the results of the most likely path selection by the path selecting section, and performs additions of the selected basic DPMs and the selected basic DBMs, thereby calculating the new basic DPMs.

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6. The ACS circuit of Claim 2, wherein the basic DPM calculating section adds each of the basic DPMs retained by the basic DPM retaining section and the reference DPMs calculated by the reference DPM calculating section to each of the basic DBMs calculated by the basic DBM calculating section to thereby calculate candidates for the new basic DPMs and selects the new basic DPMs from the candidates in accordance with the results of the most likely path selection by the path selecting section.

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7. The ACS circuit of Claim 2, wherein the path selecting section assigns different path selection numbers to branches related to transitions to states in the Viterbi

decoding and outputs, as the results of the most likely path selection, a path selection signal indicating one of the path selection numbers.